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Employment, Social Policy and Motherhood Entry:

The Evidence from South Korea

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Employment, Social Policy and Motherhood Entry: The Evidence from South Korea*

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Abstract: This study explores the relationship between women's employment and fertility in the socio-economic and institutional context of South Korea. Data used for analysis come from wave 1 to wave 10 of the Korea Labor and Income Panel Study (KLIPS). Event history analysis is applied to examine the relationship of employment status and job characteristics with women's likelihood of becoming a mother. The results show that women who leave the labor market are more likely to become mothers than women in the labor force and women with no employment experience. However, such practice has met challenges in recent years, when staying in the labor force until and during pregnancy starts gaining prevalence. Among women in the labor force, wage earners are more likely to enter motherhood than are non-wage earners. Among wage earners, women employed in the public sector are most likely to become a mother. The results suggest that employment stability is of great importance to motherhood entry in Korea.

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Introduction

Labor force participation and fertility are two central aspects of women's lives. The relationship between them has been an important topic in social science research. Most empirical research dealing with the relationship focuses on developed countries in the West. Little relevant knowledge is found about the eastern world. This study will diminish the gap by drawing attention to South Korea (or Korea).

From a macro-level perspective, the increase in female employment rates in Korea is accompanied by the decline of the total fertility rate (TFR). However, the negative association disclosed by such aggregate data cannot explain individual behaviors. This study aims at providing insight into the employment-fertility relationship from an individual level perspective. Evidence from the Korean context will contribute to a better understanding of the relationship specific to Korea.

The employment-fertility relationship is complex. The direction can be from employment to fertility or the other way around; the direction can be mutual; and there can be some common external factors affecting both behaviors (Weller 1977). Empirically, most demographic studies based on longitudinal data have treated the two variables as exogenous: the most common way is to test the effect of one on the other (Matysiak and Vignoli 2008). This study will focus on one direction of the relationship: the role of employment in fertility. Altogether, the following four questions will be explored:

1. How are women's employment statuses related to motherhood entry?
2. For women currently employed, how are their job characteristics related to motherhood entry?
3. How have the patterns changed over time?
4. What are the policy implications of the findings?

This paper begins with the theoretical framework of the study. It is followed by a brief account of the socio-economic and institutional context of South Korea. The empirical section presents

data, methods and main results. The conclusion section summarizes the main findings and discusses policy implications.

Theoretical consideration

According to Becker's theory of opportunity cost (1993), when a woman leaves the labor market for childrearing, she is faced with human capital degradation, earnings reduction, and other job-related losses. Women with higher educational achievement, higher occupational positions or higher wages may face higher opportunity costs. These women's closer attachment to the labor market reduces their propensity to have children. Van de Kaa (1987) and Lesthaeghe (1992) also claim that the rising economic activity of women has driven the fall of fertility in developed countries. They regard women's increasing labor force participation and decreasing childbearing as part of women's pursuit of self fulfillment.

Aggregate data on female labor force participation rates and TFRs reveal that the relationship between employment and fertility was negative among the 21 OECD countries before the 1980s. But ever since the 1980s, it has been positive and even strongly positive since the 1990s (Brewster and Rindfuss 2000). Countries with a higher TFR tend to have relatively high female labor force participation rates. Apparently in these countries, changes in the socio-cultural and institutional contexts may have weakened the conflict between work and family responsibilities. In countries where women can find their way to combine work and family life, the negative relationship may be weakened. But in some other countries where women are still forced to decide between employment and childrearing, the negative relationship still remains (Brewster and Rindfuss 2000, Rindfuss *et al.* 2003).

A large amount of empirical research has addressed the relationship between employment and fertility. Positive associations have been documented in Sweden (Hoem 1990, Sundström and Stafford 1992, Bernhardt 1993, Hoem 2000, Oláh 2003, and Andersson 2008). The individual tax and family policies that support gender equality and female labor force participation are argued to have contributed to a high compatibility between employment and parenthood. This is

regarded as conducive to the relatively high fertility levels in Sweden. A positive association is also found in other countries which belong to the universal welfare regime, such as Norway (Rønsen 2004, Lappegård 2010) and Finland (Vikat 2004). In contrast, a negative association is found in countries which are considered conservative and familialistic welfare states such as (West) Germany and Italy, which either encourage traditional gender division of work and care or offer less policy support to help women reconcile work and family life (Matysiak and Vignoli 2008).

Apart from the institutional contribution, the influence of economic cycles on the relationship has also been addressed. Kreyenfeld *et al.* (2012) summarize how economic and employment uncertainties are related to fertility and family dynamics across Europe. Sobotka *et al.* (2011) discuss how the most recent economic recession affects fertility in the developed world. Some researchers such as Rindfuss *et al.* (1988) and Lee (1990) consider fertility decline during recessions as temporary. It may be compensated after economic recovery. For example, Andersson (2000) reveals fertility swings with economic ups and downs in Sweden in the 1980s and the 1990s. But others like Philipov and Dorbritz (2003) do not find recovery of fertility after the resumption of economic growth. The effect of economic conditions not only varies by country, but also by person. According to Butz and Ward (1979), periods of economic prosperity are often associated with low fertility as raising children during this time might be expensive. In Macunovich's (1996) view, some women may refrain from childbearing during recession time, while others may see this period as an opportunity for pregnancy as their expectations for future career are disrupted. According to Friedman *et al.* (1994), for women with low educational level and income, when the chance of getting a good job deteriorates in difficult economic situations, becoming a parent may serve to reduce uncertainties in their life situation.

Socio-economic and institutional contexts of South Korea

Dating back to the 1950s and the 1960s, Korea was a country with rapid population growth, high population density, high fertility levels and little developed industrial economy *(*Jones and Leete 2002). Like in many other Asian countries, the growing population was viewed as an obstacle to

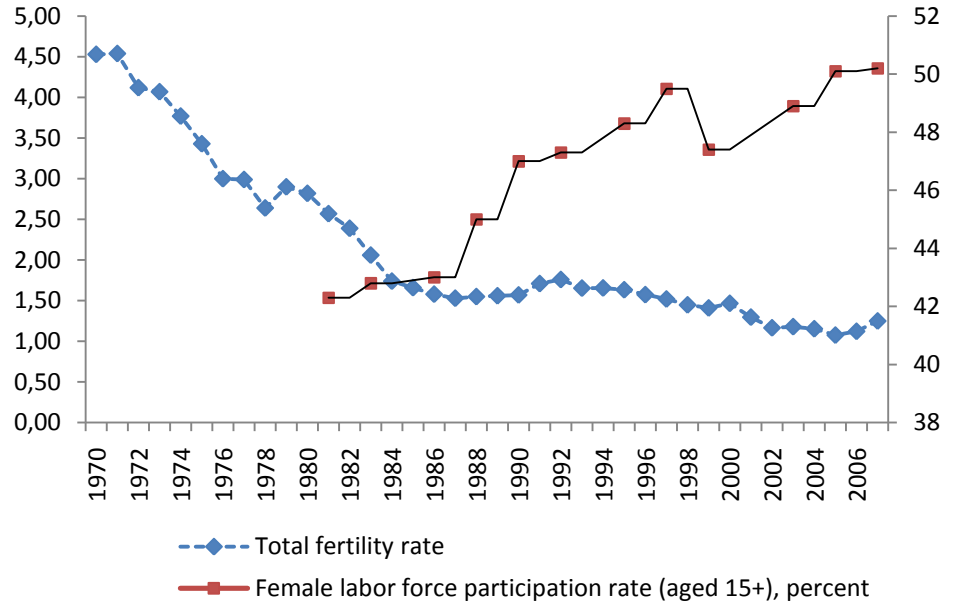
economic development. In 1962, the Korean government implemented family planning program to control population growth (Rhee 2007). This program was an integral part of Korea's national economic plan. Its goal was to reduce the number of unwanted births and bring down the ideal number of children to three or fewer. In the early 1980s, the goals became to reduce the average ideal family size to two children and to lower the TFR to the replacement level by 1988. The program was abandoned after 1988, partly because these goals had been achieved (Choe and Retherford 2009).

Figure 1 shows that Korea's TFRs experienced a sharp decline from above 4 in the 1960s and the 1970s to below the replacement level in 1983. The period 1984-2000 witnessed a stagnated fertility decline, with TFRs lingering between 1.8 and 1.4. The 2001 breakthrough of 1.3 marked the onset of the lowest-low fertility era. Choe and Retherford (2009) conclude that the family planning program was the main power driving down Korea's fertility.

In sharp contrast with the fertility decline is the steady increase in female employment rates (see Figure 1). Improving female labor force participation was the very first measure taken in Korea to solve the problem of labor shortage and to boost economic growth (Cho 2000). The 1988 *Equal Employment Act* prohibited discrimination against women in employment, wages, and working conditions. It also prohibited discrimination against employed women due to marriage, pregnancy or child delivery. Meanwhile, a female public employee target system was established to enhance the recruitment of women in the public sector (Cho 2000).

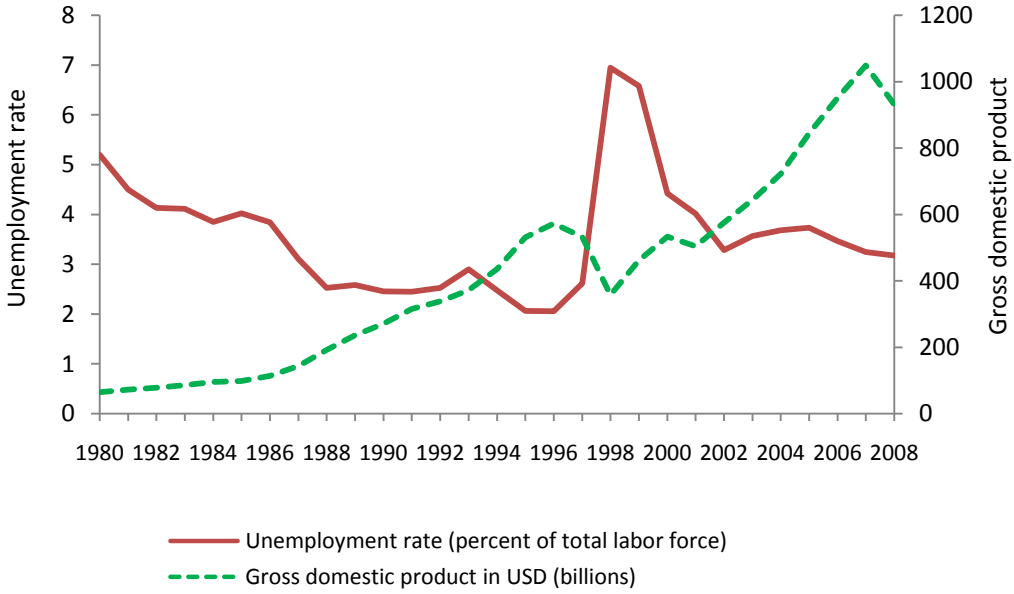
The decline of fertility and the increase in female labor force participation has been accompanied by Korea's fast economic expansion. Figure 2 displays the increase of Korea's gross domestic product (GDP) since the early 1980s. However, the steady increase was blocked in 1997 by the Asian financial crisis, which started from the sudden economic meltdown of Thailand and quickly spread to other countries in Asia. Korea could not escape the contagion. Decrease of regular employment and social unrest were felt at every corner of society. The unemployment rates skyrocketed in 1998. And the GDP had nowhere to go but down. It was not until 2002 that the country had regained its economic health.

Figure 1: Development of total fertility rate and female labor force participation rate, Korea



Source: Korea Statistical Information System (KOSIS) & LABORSTA Labor Statistics Database, International Labor Organization

Figure 2: Gross domestic product (GDP) and unemployment rate since 1980, Korea



Source: International Monetary Fund, World Economic Outlook Database, April 2011

To ease the consequences of unemployment and poverty triggered by the crisis, the government reformed the existing welfare system. New practices were introduced with the government's "productive" welfare concept that sought to achieve balance between economic growth and social protection (Kim 2009, Chan 2006).

Among the reforms was that of maternity leave. 60 days of unpaid maternity leave had remained unchanged since 1945. In November 2001, 90 days of fully-paid maternity leave became standard according to the *Maternity Protection Act* (Kim 2006). Two-thirds of the pay was on employers' responsibility. The remaining one-third was funded through Employment Insurance and the national budget (Kim 2006). Meanwhile, the *Maternity Protection Act* also introduced parental leave. It regulates that any male or female worker can take paid parental leave and is entitled to receive a flat-rate wage replacement of 200,000 KRW[1] per month for 10.5 months. Dismissal during maternity leave or parental leave is prohibited. Women and men have the legal right to return to the same or a similar position. In 2005 this act was revised. It regulates that from 2006 onwards the full payment during maternity leave is paid through public transfer for workers in small- to medium-sized companies, while large companies still take the responsibility of two-thirds of the benefit (Suzuki 2008, Peng 2009).

However, both maternity and parental leaves are restricted to workers covered by the Employment Insurance, who are mainly regular employees with stable employment positions. In 2003, only 40% of all female workers were under the coverage (Peng 2009). The rules for parental leave are just guidance, which is heavy on words and light on action. It is up to the employer to decide whether to implement it or not at a workplace. Not surprisingly, not many women are able to take parental leave. Fathers' uptake of parental leave is almost negligible (OECD 2006).

Apart from maternity and parental leave, the Korean government has also made efforts to promote child care services to help women reduce the burden of childrearing and to facilitate for women to reconcile work and family life. However, the supply of service is far from enough. Childcare centers for children aged 0-3 are in urgent need. In 2005, only 19.6% of children below

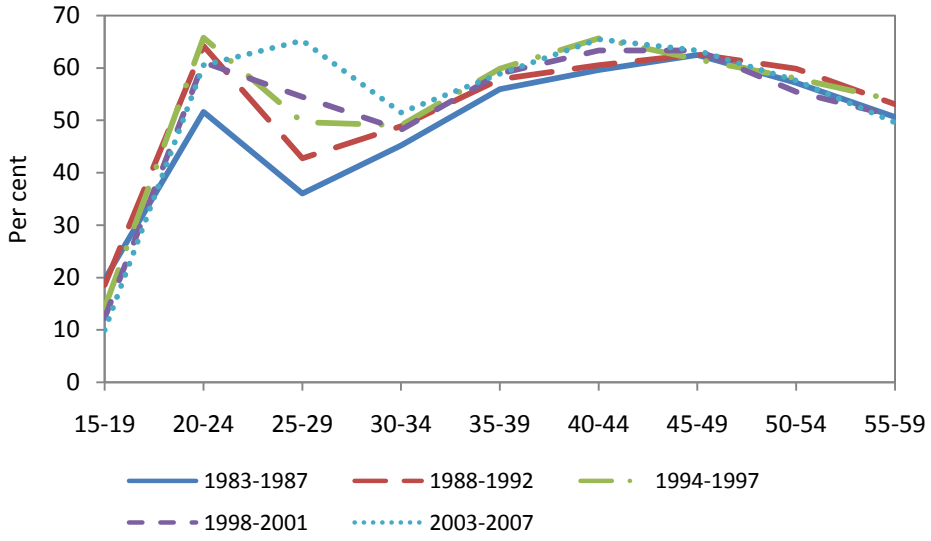
[1] 200,000 KRW is roughly 160 US dollars based on the exchange rate between South Korea won and US dollars in 2001 (1:0.0008).

age 3 can have access to child care services. The access rate for children aged 3 to 6 is 68.3% (OECD 2006).

Child allowance has not yet been introduced in Korea. One reason is budget constraints. Another reason is that some economists were concerned that child allowance may restrain women's labor force participation enthusiasm (Suzuki 2008).

The restriction of maternity leave, the lack of implementation of parental leave, and the shortage of childcare services for children less than 3 years old indicate that the support Korean government offers to help women reconcile work and family life is not sufficient. Korean women are confronted with a high level of incompatibility between work and family life. Under such circumstances, tackling the work-life conflict is at women's own risk.

Figure 4: Female labor force participation rate of Korea by age since the early 1980s



Source: LABORSTA Labor Statistics Database, International Labor Organization (data unavailable for 1993 and 2002)

Figure 4 discloses Korean women's labor force participation rate by ages and years. M-shaped curves appear for all calendar year periods. For decades, Korean women have followed a similar strategy to arrange their work-family life career: labor market entry – leaving labor market for family life – labor market re-entry when their children need less concern. The patterns indicate that for Korean women, temporarily sacrificing their career at a certain stage of life for the sake

of family formation and expansion is entrenched with tradition. If we take a closer look, we can see that labor market exits have gradually shifted from ages 25-29 to ages 30-34. Besides, fewer women drop out of the labor market for family life in most recent years. Women aged 20-44 are more economically active in the latter periods.

Evidently, social and economic developments have provoked changes in social values. According to Brinton (2001), Korean women originally worked to bring in extra income to the family – to their parents if not married and to their husbands if married. But gradually, with women becoming more educated and their attachment to the labor market stronger, they tended to work for their own life goals and individual independence. At the same time, the social value of the link between marriage and childbearing has remained unchanged. Marriage, childbearing and childrearing are tightly linked together. Childbearing should, and typically does, occur after marriage (Rindfuss 2004). Under such circumstances, prolonged education, delayed marriage formation or even marriage forgone will unavoidably bring down fertility, as is argued by Choe and Retherford (2009) and Kye (2008).

Data and methods

Data used for the analyses in this study are from wave 1 to 10 of the Korea Labor and Income Panel Study (KLIPS) initiated by the Korea Labor Institute. It is Korea's only labor-related panel survey. The first wave was conducted in 1998 with an original sample of 5000 households in urban areas. Direct face-to-face interviews with the household reference person or the spouse were carried out for information of household members aged above 15. In limited special cases, other methods were used such as questionnaire or telephone interviews. Two types of data were collected: household data such as demographic characteristics and changes in household composition and individual data such as work history and job characteristics. Thereafter, the panel was conducted annually to track changes in characteristics of households as well as economic and social activities of individuals. If an individual within a household turned 15, or if an individual aged above 15 joined a sampled household, he or she is included in the survey. New respondent data were collected regarding retrospective information. If some members of

the households moved out and formed new families, the new household and its members were tracked, too.

I use event history analysis to examine the relationship of women's employment with motherhood entry. The observation window opens when women turn 15. The events are tracked prospectively in time and dated monthly. Woman-months is the unit of analysis. The observation window shuts at the time of first birth, the last interview, or age 45, whichever comes first. Considering the conventional social practice of Korean women's leaving the labor market for family life, I subtract 9 months from the date of any first birth to capture the effect of pre-pregnancy employment status and job characteristics on first-birth fertility. As to respondents who remain childless until the interview time or age 45, I also predate 9 months from censoring. Hence, the dependent variable of this study is the confirmed conception of the first live birth[2].

The total sample for observation contains 7338 women aged 15-44 during 1978 to 2006, among whom 3370 conceive their first child within our observation time. I apply piecewise constant exponential models. The model can be depicted as follows:

$$h(t|x_j) = h_0(t)exp\ (x_j\beta_x)$$

where $h_0(t)$ represents the baseline hazard function, x_j represents a vector of explanatory and control variables used in the analysis and β_x the corresponding vector of the regression parameters that indicate the effect of the variables.

Table 1 presents the descriptive statistics of our sample regarding the dependent variable and the three prime explanatory variables. First and foremost, the time-varying calendar year variable is categorized into 6 groups on a five-year basis. The period of 1998-2002 is set as the reference category because this period indicates not only the aftermath of the 1997 Asian financial crisis but also the starting of Korea's welfare reforms. The first four year groups represent the time of fast economic growth before the crisis and 2003-2006 stands for the economic recovery period after the crisis.

[2] In this paper, the term "conception of the first live birth" may be replaced by "motherhood entry", "motherhood transition", "first time pregnancy" or "first birth".

Table 1: Distribution of person-time and events by main explanatory variables

	Person-time (Woman months)		Events (First conception)	
Calendar years				
1978-1982	153598	17%	714	21%
1983-1987	140452	16%	618	18%
1988-1992	147538	16%	600	18%
1993-1997	161387	18%	545	16%
1998-2002	164824	18%	550	16%
2003-2006[3]	136647	15%	343	10%
Employment status				
Never employed	460611	51%	893	26%
Employed	298581	33%	1181	35%
Ever / non-employed	145254	16%	1296	38%
Work type - Workplace				
Never employed	460611	51%	893	26%
Wage earners-Private	123071	14%	475	14%
Wage earners-Public	29743	3%	206	6%
Wage earners-Other	7831	1%	18	1%
Non-wage earners	52781	6%	175	5%
Employed but missing	85155	9%	307	9%
Ever / non-employed	145254	16%	1296	38%
Total	904591		3370	

Another important explanatory variable is the time-varying female employment status. It contains 3 categories: never employed, employed (reference), ever but non-employed. “Never employed” indicates periods when women have had no employment experience. “Employed” refers to the spells when women stay in the labor force, and “ever but non-employed” indicates the periods when women have left the labor market.

[3] The last wave of the survey was conducted around April to June in 2007. Because of the predating of timing from first birth to first live conception, no events fall in 2007. For the same reason, the number of events in 2006 is influenced by the 9 month subtraction.

For women who stay in the labor force, information on job characteristics such as whether they work as wage earners or non-wage earners (mainly those working for family businesses) is available. For women currently working as wage earners, the episodes of "wage earners" are also specified by "private sector", "public sector"[4] and "other". "Public sector" which offers the most stable job positions can be seen as a proxy for employment stability. (Employed women with missing employment information are categorized as "employed but missing".)

Seven variables are used as control variables, among which three are time varying and four are time fixed. Descriptive statistics for these variables are shown in the appendix. Woman's age, time-varying, is grouped into 15-19, 20-24 (reference), 25-29, 30-34, 35-39, and 40-44 years. It is the basic time factor of this study.

Assuming that all women in the sample follow a standard trajectory in Korea's relatively rigid education system, I construct the time-varying education variable based on each woman's estimated school enrollment history and the time when they left school. It is categorized into 6 groups: in-education, elementary, middle school, high school (reference), college, and university or above. "In-education" signifies the periods when women are still enrolled in education. The other five groups indicate women's educational achievement.

Marital status, time varying, is categorized into singlehood, first marriage (reference), disrupted periods and later marriages. Expanding the observation range to all women at reproductive ages rather than confining the study to only married women will reveal the motherhood entry dynamics both in and out of wedlock.

Background variables including religion, childhood residence, education of woman's father and mother are all time fixed. Five categories are taken into account for religion: no religion, Buddhist, Protestant, Catholic and others. Childhood residence (residence at age 14) is grouped into 3 categories: the Seoul National Capital Area (including Seoul, Incheon and Gyeonggi-do)[5], other metropolitan areas (including Busan, Daegu, Daejeon, Gwangju and Ulsan), and other

[4] "Public sector" includes schools, hospitals, state-owned enterprises, government or government branches.

[5] Seoul, or the Seoul Special City is the capital and the largest city of South Korea. The Seoul National Capital Area includes the Incheon metropolis and most of Gyeonggi province. Around half of Korea's population lives in the Seoul National Capital Area and almost a quarter in Seoul itself.

provinces (including the remaining nine provinces of South Korea). Education of woman's father and mother is categorized into three groups, respectively: low (elementary education or no schooling), middle (middle and high school education), and high (college or above).

To address my research questions, I first run main effects models to capture the association of each factor with entry into motherhood, step by step, to see how each factor is associated with first-birth fertility. Extended main effects models – with data on work type and workplace are specified afterwards to get a more detailed picture of the role of job characteristics in childbearing behavior. At the very last step, interaction models are estimated to pursue how the roles of employment status and job characteristics have changed over time.

Results from main effects models

Table 2 presents estimations from the main effects models in the form of relative first birth risks by employment status and other covariates. Model 1 - the simplest model - includes only woman's age and calendar year to capture the unconditioned calendar year effects on women's likelihood of becoming a mother. In model 2, employment status is included. From model 3 to model 5, education, background factors, and marital status are added stepwise. We will first discuss the two main explanatory variables – calendar period and employment status. The other variables are briefly discussed afterwards.

An overall reduction of first birth fertility over calendar years is discerned in model 1. The involvement of employment status, education and background factors does not change this declining trend. When marital status is considered, the decline over the first two year groups disappears but the decline after the late 1980s still remains. The results suggest that the reduction of motherhood entry is closely associated with marriage decline in Korean society. But the marriage decline itself cannot explain all the consecutive decline of first birth. The Asian financial crisis that hit Korea in 1997 is argued to have exacerbated the decline. But, when Korea's economic health started recovering after 2003, no sign of fertility recovery was shown.

Model 2 incorporates employment status into the analysis. Women who have left the labor market have more than 100% higher intensity of becoming a mother than women who remain in the labor force. Women with no employment experience are under rather low risks. When marital status is involved, the difference between the three groups is reduced but the pattern still remains. These findings indicate that motherhood transition often occurs to women who leave the labor market. Leaving is a signal for family extension.

Differential effects of educational level on motherhood transition are discovered. Women in education are at the lowest risk of becoming mothers. Among women who completed their education, women at college level or above are most likely to become mothers. When marital status is held constant, the pattern becomes clearer. Once married, the higher-educated a woman is, the faster she is to become a mother. The results reveal a selection effect of education on motherhood entry. Higher-educated women are more likely to postpone marriage or even forgo marriage. But among women who do get married, higher-educated women are more committed to the course of becoming a mother than women with lower educational attainment.

Estimations of social background factors show that religion does not make much difference to women's first-time pregnancy. But childhood residence does. Women who grew up in Seoul National Capital Area are the least likely to become mothers. Educational attainment of woman's father is negatively associated with motherhood entry, while the influence of the education of her mother is not clear. Compared to women in their first marriage, women in singlehood are at very low risks. The estimation for later marriages is uncertain and not statistically significant because of too few cases of this category in our data.

Table 2: Estimations of motherhood entry from main effect models

	Model 1 Haz. Ratio		Model 2 Haz. Ratio		Model 3 Haz. Ratio		Model 4 Haz. Ratio		Model 5 Haz. Ratio	
Woman's age (Baseline)										
15-19	0.09	***	0.11	***	0.35	***	0.35	***	0.57	***
20-24	1		1		1		1		1	
25-29	2.47	***	2.14	***	1.79	***	1.80	***	0.92	**
30-34	0.81	***	0.71	***	0.62	***	0.63	***	0.23	***
35-39	0.14	***	0.13	***	0.12	***	0.12	***	0.04	***
40-44	0.01	***	0.01	***	0.01	***	0.01	***	0.00	***
Main explanatory variables										
Calendar year										
1978-1982	2.05	***	2.38	***	2.20	***	2.10	***	1.38	***
1983-1987	1.94	***	2.13	***	1.98	***	1.90	***	1.55	***
1988-1992	1.76	***	1.83	***	1.76	***	1.70	***	1.45	***
1993-1997	1.29	***	1.34	***	1.35	***	1.34	***	1.18	***
1998-2002	1		1		1		1		1	
2003-2006	0.68	***	0.70	***	0.64	***	0.65	***	0.77	***
Employment										
Never employed			0.75	***	0.95		0.96		0.78	***
Employed			1		1		1		1	
Ever/non-employed			2.09	***	2.14	***	2.15	***	1.36	***
Control variables										
Own education										
In-education					0.04	***	0.04	***	0.04	***
Elementary					0.67	***	0.61	***	0.44	***
Middle					1.01		0.93		0.73	***
High					1		1		1	
College					1.07		1.10		1.21	***
University or above					1.17	**	1.30	***	1.39	***

Table 2: (Continued)

	Model 1 Haz. Ratio	Model 2 Haz. Ratio	Model 3 Haz. Ratio	Model 4 Haz. Ratio		Model 5 Haz. Ratio	
Religion							
None				1		1	
Buddhist				1.06		1.03	
Protestant				1.03		1.02	
Catholic				0.97		1.00	
Other				0.99		1.13	
Childhood residence							
Seoul National Capital Area				1		1	
Metropolitans				1.19	***	1.16	***
Other provinces				1.36	***	1.23	***
Father's education							
Low				1		1	
Medium				0.86	***	0.89	***
High				0.74	***	0.76	***
Mother's education							
Low				1		1	
Medium				1.15	***	1.13	**
High				1.01		1.03	
Marital status							
Single						0.14	***
First marriage						1	
Disrupted						0.23	***
Later marriages						0.63	
Constant	0.00	0.00	0.00	0.00		0.02	
No. of subjects	7338						
Number of obs	121178						
No. of failures	3370						
Time at risk	904446						
Log likelihood	-4119.44	-3844.24	-3436.63	-3387.03		-2315.11	
LR chi2	3774.16	4324.55	5139.77	5238.98		7382.81	
Prob > chi2	0.000	0.000	0.000	0.000		0.000	

Note: Statistical significance: ***: p<=0.01; **: p<=0.05; *: p<=0.10

Source: Estimations based on KLIPS

Table 3: Estimations of motherhood entry by job characteristics, standardized for other factors (including marital status)

Work type			**Workplace**		
Never employed	0.74	***	Never employed	0.57	***
Wage earners	**1**		**Wage earners-Private**	**0.76**	****
Non-wage earners	0.80	***	**Wage earners-Public**	**1**	
Employed but missing*	0.42		**Wage earners-Other***	**0.68**	
Ever / non-employed	1.31	***	Non-wage earners	0.62	***
			Employed but missing	0.68	***
			Ever / non-employed	1.01	
Log likelihood	-2310.2			-2303.1	
LR chi2	7392.7			7406.9	
Prob > chi2	0.000			0.000	

Note: Statistical significance: ***: p<=0.01; **: p<=0.05; *: p<=0.10

*The estimations for "Employment but missing" in the work type model and "Other" in the workplace model are not statistically significant on account of limited number of cases.

Source: Estimations based on KLIPS

Table 3 presents results from the extended main effects models which explore the role of job characteristics in first-time motherhood transitions in Korea. The effects of other covariates are similar to those in model 5 of Table 2 and are thus not exhibited again. All other things being equal, the chance of becoming a mother is 20% higher for wage earners than for non-wage earners at a statistically significant level.

For women currently employed as wage earners, those working in the public sector such as in schools, hospitals, state-owned enterprises, government or government branches are more likely to become a parent than those working in the private sector. This is expected. Women employed in the public sector are usually under the protection of Employment Insurance. Their employment positions are more stable and regular. Besides, after 2001 they are granted a 3-month maternity leave and they have more chance to take the 10.5 month of parental leave than others. What is more, they are most often guaranteed their previous job or a job of similar status when they return to the labor market after childbearing. Employment stability gives these women a sense of security to proceed to childbearing without fear of losing jobs.

Results from interaction models

Figure 5 presents relative risks by employment status and calendar period. In line with our estimation in the main effects model, a general decline of motherhood entry occurs in all groups of women since the 1980s, irrespective of their employment status. The trend decline for women who have left the labor force is constant and steep, while the decline for women in the labor force is relatively weak. The results imply that leaving the labor market at an early stage of family formation has become less and less important. Instead, women have become more likely to stay in the labor force until or during pregnancy.

Figure 5 also reveals that back in the late 1970s, women with no employment experience had relatively higher risks of becoming a mother than women in the labor force. But since the early 1980s, they have become the least likely to become a mother. And their trend keeps declining ever since except for a slight reversal during the economic downturn in 1998-2002. This slight reversal possibly reflects these women's strategy to readjust their life career under the bad economic situation. When the country's economy went sluggish and the job market slipped into stagnation, instead of waiting in vain for a job opportunity, some women with no employment experience opted for becoming a parent first.

Further, our interactions reveal that among wage earners, women employed in the public sector have had higher likelihood of motherhood entry than women working in the private sector through our entire observation time (Figure 6). It is clear that during the late 1970s and the 1980s, the type of workplace made a big difference to motherhood transition, whereas the difference gradually shrank to none during 1993-1997. At the economic downturn after the Asian financial crisis, the difference developed de novo. The results confirm that employment stability has been an important correlate of motherhood entry, regardless of economic boom or downturn.

Figure 5: Interaction of employment status and calendar period in motherhood entry, standardized for other factors

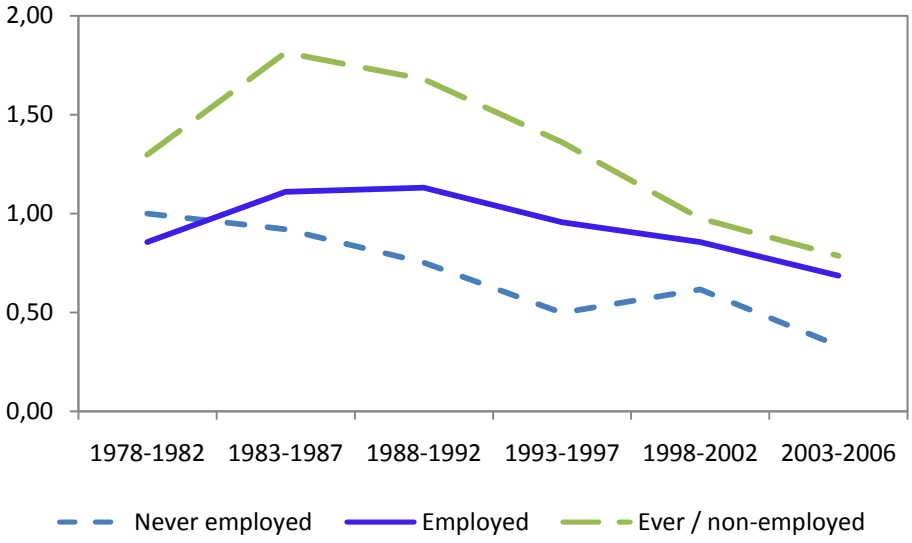
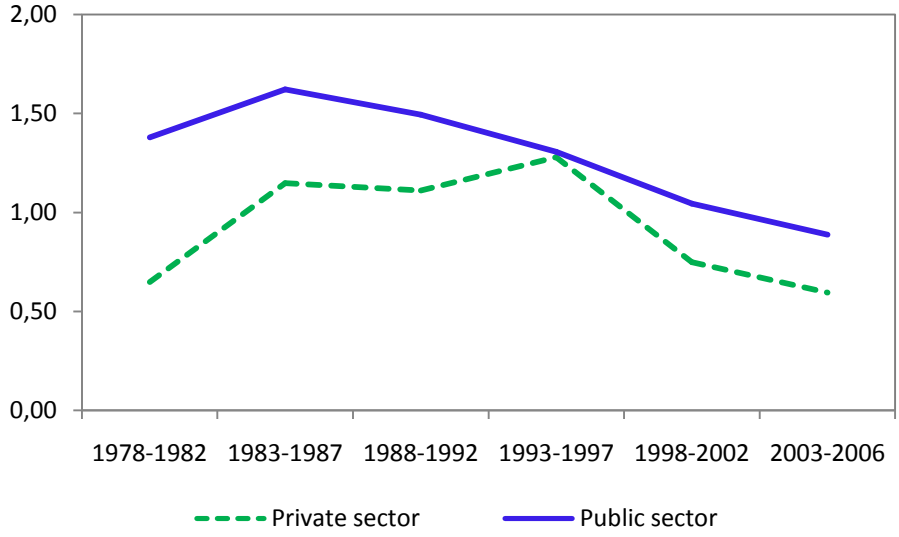


Figure 6: Interaction of type of workplace and calendar period in motherhood entry of wage earners, standardized for other factors



Conclusion and policy implications

This study explores the relationship of employment with fertility in the context of South Korea. I have applied piecewise constant exponential models to longitudinal data to estimate how employment status and job characteristics are related to motherhood entry. Main effects models, extended models, and interaction models were specified to address my research questions.

The results showed that women who had left the labor market were more likely to become a mother than women still in the labor force and women with no employment experience. Leaving the labor market at an early stage of family formation has been a common practice among Korean women. However, this practice has met challenges in recent years as staying in the labor force until and during pregnancy started gaining prevalence.

Another finding of the study relates to the effect of job characteristics on motherhood entry. Among women currently working in the labor force, we find that wage earners are at significantly higher risks of becoming a parent than are non-wage earners. Among wage earners, women employed in the public sector have higher motherhood entry rates than women working in the private sector. This pattern holds through our observation period. This implies that employment stability has been of great importance to motherhood entry for employed women in Korea.

Social policies related to the welfare of women and children in Korea deserve discussion. The maternity leave and parental leave are much tailored to workers under the coverage of Employment Insurance. Women outside the coverage are out of reach for these benefits. This study points to the need for further welfare reform in Korea both in width and in depth so that a substantially wider range of women can better reconcile their work and family life.

In recent years, Korean women's attachment to the labor force has become increasingly strong. Working women who become mothers are faced with the decision on whether to return to the labor force or when to return. Upon return, they have to face challenges with career

opportunities for mothers. Future research needs to address the topic of how childbearing is related to women's labor market re-entry.

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Appendix: Descriptive statistics of covariates for main effect models

	Person-months		Events	
Woman's age				
15-19	271430	30.0%	119	3.5%
20-24	276933	30.6%	1312	38.9%
25-29	151084	16.7%	1604	47.6%
30-34	74428	8.2%	282	8.4%
35-39	63607	7.0%	48	1.4%
40-44	67109	7.4%	5	0.1%
Education				
In-education	288136	31.9%	27	0.8%
Elementary	109329	12.1%	255	7.6%
Middle	89264	9.9%	457	13.6%
High	277660	30.7%	1717	50.9%
College	60541	6.7%	374	11.1%
University or above	79661	8.8%	540	16.0%
Religion				
None	411890	45.5%	1418	42.1%
Buddhist	197667	21.9%	826	24.5%
Protestant	207829	23.0%	804	23.9%
Catholic	75651	8.4%	276	8.2%
Other	11554	1.3%	46	1.4%
Childhood residence				
Seoul National Capital Area	312461	34.5%	917	27.2%
Metropolitans	171755	19.0%	582	17.3%
Other provinces	420375	46.5%	1871	55.5%
Father's education				
Low	411278	45.5%	1850	54.9%
Medium	376650	41.6%	1210	35.9%
High	116663	12.9%	310	9.2%
Mother's education				
Low	659793	72.9%	2729	81.0%
Medium	222542	24.6%	603	17.9%
High	22256	2.5%	38	1.1%
Marital status				
Single	656991	72.6%	1135	33.7%
First marriage	230850	25.5%	2224	66.0%
Disrupted	16126	1.8%	9	0.3%
Later marriages	624	0.1%	2	0.1%
Total	**904591**		**3370**	